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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER				
CHANG, AUDREY Y				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/507,079

Applicant(s)

HOLMES, BRIAN WILLIAM

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-36, 38, 39, 41-53 and 55-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32-35, 38, 39, 41-53 and 55-70 is/are rejected.
- 7) ☒ Claim(s) 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 4, 2008 has been entered.
2. This Office Action is also in response to applicant's amendment filed on June 4, 2008, which has been entered into the file.
3. By this amendment, the applicant has amended claims 32, 35-36, 50, 55 and 65 and has canceled claims 40, 54.
4. Claims 32-36, 38-39, 41-53, and 55-70 remain pending in this application.
5. The rejection of claim 35 under 35 USC 112, first paragraph, set forth in the previous Office Action is withdrawn in response to applicant's amendment.

.Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
 7. Claims 32-33, 38-39, 42-44, 46-53, 56-59, 61, 63-65 and 66-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik (PN. 5,128,779).
- Mallik teaches an *authentication item*, serves as the *security device*, that is comprised of a *first and second holographic relief structures*, (23 and 103, Figure 11 or 121 and 127, Figure 12), that serve as

the first and second *diffractive or holographic optically variable effect generating structures* wherein the first and second holographic relief structures are *superposed* to each other with the second holographic relief structure is viewable through the first holographic relief structure.

Claims 32 and 50 include the phrase "the replay characteristics of the structures to generate a visually integrated image". Mallik teaches explicitly that the second holographic optically variable effect generating structure is viewable through the first holographic optically variable effect generating structure. The explicitly patterned or discontinuous layer of reflective material (25 or 123) make the incident light (107, Figure 11) to incident on the second structure (103) via the first structure (23). The diffracted lights (109) and (111) which represent the replayed images from the first structure and the second structure. Although this reference does not teaches *explicitly* if the image characteristics is "a visually integrated image", such modification would have been obvious to one skilled in the art to design the replayed images from the first and second structures to provide a harmonious image to provide either desired authentication measure or decorative appearance as desired. Noted the same incident light (107) is capable to replay both images from the first structure (23) and the second structure (103) at the **same time**. As shown in Figure 11, by moving viewing positions, the observer is capable of viewing the images replayed by diffracted light (109) and (111) in an "integrated" manner to provide "visually integrated image". Furthermore, Mallik teaches explicitly that the *precise angles* of the replay image lights (109 and 111) could be designed and adjusted by the optical geometry used in making the original masters of the first and second structures, (please see column 10, lines 25-30). Although Mallik teaches one design of viewing one reconstructed image from one of the holograms at a time. This actually means it is within general level of skill of a worker in the art to design reconstructed holographic images from the two holograms to be seen in integrated manner or independent manner. It is really an obvious matters of design choices to one skilled in the art to have the two reconstructed holographic images integrated viewed or independently viewed. It would therefore have been obvious to one skilled in the art to modify

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and *design* the angle of the image lights as desired to make the images either viewed at same angle (integrated view) or different angles for the benefit of providing different varieties of combined visual images or visual appearances to the authentication item.

Claims 1 and 50 have been amended to include the phrase that "the first and second optically variable effect generating structures have been originated by different process". The product-by-process limitations are not given patentable weight per se, since the process limitations do not differentiate the final product, (i.e. the first and second diffractive or holographic optically variable effect generating structures) from that of the prior art. (Please see MPEP 2173.05(p)). Furthermore, Mallik teaches that the first hologram relief pattern (23 or 121) can be formed by *embossing* or casting methods and the second hologram relief pattern (103 or 127) can be formed by casting, (please see column 11, lines 43-53). Embossing method is different from casting method.

With regard to claims 33 and 56-57, Mallik teaches that the first holographic relief structure (23 or 121) further comprises a *discontinuous* layer of reflective aluminum metallic material, (25 or 123, column 4, lines 35-36). The discontinuous layer of reflective metal material also serves as the partially reflective layer.

With regard to claims 38-39 and 53, Mallik teaches that the first and second diffractive or holographic optically variable effect generating structures comprise first and second relief holograms, (23 and 103 please see column 9, lines 63-65). The second relief hologram pattern further comprises an opaque, reflective layer (105 or 129, column 10, line 4-6 and column 11, lines 52-54).

With regard to claims 42 and 58-59, Mallik teaches that the first and the second holograms are formed separately and attached to each other via an adhesive layer, (please see column 12, lines 17-20).

With regard to claims 43-44, 47 and 61, Mallik teaches that the first and second relief holograms are supported by a carrier layer (31, Figure 3A) via a wax release layer (33, Figure 3A, please

see column 5, lines 9-12). The authentication article having the first and second relief holograms can be attached to a substrate via an adhesive (27, Figure 3A).

With regard to claims 46 and 52, Mallik teaches that the film for recording the relief hologram can be a plastic film, which is a polymer.

With regard to claim 48, this reference does not teach explicitly to include dye or pigment. However Mallik teaches that the authentication article further comprises printed photograph (15) or writing (13). This printed photograph or writing may include or be modified to include dye or pigment to make the printed information has color appearance. Such modification would have made the authentication article with more color printed features.

With regard to claim 49, Mallik teaches that multiple holograms can be formed in the authentication article. It would have been obvious to one skilled in the art to provide one or more relief holograms in between the first and second relief holograms for the benefit making desired designs for the security feature in the authentication article.

With regard to claim 50, the method for making the authentication article with the first and second relief holograms are implicit included in the structure disclosure recited in claim 32 above.

With regard to claim 51, Mallik teaches that the relief holograms are embossed into corresponding surfaces of embossing layers, (please see column 11, lines 29-30).

With regard to claims 63-65 and newly added claim 70, Mallik teaches that the authentication article may be applied on documents such as credit card or stock certificated wherein the credit card and stock certificate is a form of banknote, (please see column 1, lines 21-30).

With regard to newly added claims 66 and 68, Mallik teaches that the second holographic optically variable effect generating structure is a hologram or a holographic optical element. However it does not teach explicitly that it is a volume hologram. But volume hologram is just one type of well-known hologram, which by definition has the thickness of the interference fringes recorded, is

comparable to the thickness of the recording medium. It would have been obvious to modify the second structure to make it a volume hologram for one thing it is a well known type of hologram in the art for another it is also well known in the art that a volume hologram has a better diffraction efficiency. Such modification would increase the diffraction efficiency and therefore increase the viewing quality of the authentication item.

With regard to the newly added claims 67 and 69, Mallik teaches explicitly that the discontinuous reflective metal layer (25 or 123) is registered with the surface relief microstructure of the first structure, (23 or 121).

8. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik as applied to claim 32 above, and further in view of the patent issued to Cueli (PN. 5,513,019).

The *authentication article* including a first and second relief holograms taught by Mallik as described for claim 32 above has met all the limitations of the claim. Mallik teaches that the first relief hologram includes a discontinuous reflective layer serves as partial reflective layer. However it does not teach that the partially reflective layer is formed by high refractive index dielectric material. Cueli teaches a semi-transparent reflective layer for a hologram wherein the semi-transparent reflective layer may also be formed by using high refractive index dielectric layer, (please see column 4, lines 56-65). It would have been obvious to one skilled in the art to make the reflective layer a high refractive index dielectric material for the benefit of making the reflective layer a semi-transparent reflective layer to allow the second relief hologram be viewed without obstruction. The first relief hologram is regard having a grating structure. With regard to claim 35, although these references do not teach explicitly that the second holographic optically variable effect generating structure generate diffuse diffraction.

However one skilled in the art must understand that a hologram by nature has diffusion property. In particular different wavelength of light incident on the hologram will be diffracted into different angle.

9. Claims 41, 45 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik as applied to claim 32 above, and further in view of the patent issued to Staub et al (PN. 5,886,798).

The *authentication article* including a first and second relief holograms taught by Mallik as described for claim 32 above has met all the limitations of the claim.

With regard to claims 41 and 55, Mallik teaches that the relief hologram are formed by embossing or casting methods but it does not teach that the hologram may also be formed by e-beam lithograph. Staub et al in the same field of endeavor teaches that e-beam lithograph is a standard method for producing hologram, (please see column 8, lines 1-10). It would then have been obvious to one skilled in the art to apply the teachings of Staub et al to use e-beam lithography process as an alternative method for producing the holograms.

With regard to claim 45, Mallik teaches that the hologram may be formed in a plastic film but it does not teach that it may also be formed in a lacquer layer. Staub et al in the same field of endeavor teaches that the relief hologram may be formed in a lacquer layer, (5, please see Figure 1). It would then have been obvious to one skilled in the art to apply the teachings of Staub et al to make the relief hologram in a lacquer layer since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended used as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

10. Claims 60 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik et al as applied to claim 50 above, and further in view of the patent issued to Kaule et al (PN. 6,294,241).

The authentication article including first and second relief holograms taught by Mallik as described for claim 50 above has met all the limitations of the claims.

Mallik teaches a laminated adhesive used to bond the first and second relief holograms, however it does not teach that the adhesive is UV curable. UV-curable adhesive is well-known in the art for adhering optical layers. **Kaule** et al in the same field of endeavor teaches that a UV-curable adhesion may be used to adhere the security document with hologram layer, (please see column 3, line 28-29, and column 4, lines 21-30). It would then have been obvious to one skilled in the art to use a UV-curable adhesive as the adhesive to bond the holograms for the benefit of making the bonding activated by using UV radiation.

With regard to claim 62, Mallik teaches that the holograms are supported by a carrier layer (31, Figure 3A) via a wax release layer (33).

11. Claim 36 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: of the prior art references considered none disclosed a security device having first and second superposed diffractive or holographic optically variable effect generating structures where the structures are first and second zero-order diffractive device with the first zero-order diffractive device generates an image in first color at a first orientation and in a second color at a second orientation and the second zero-order diffractive

device generates an image in the second color in the first orientation and the first color in the second orientation, as set forth in the claim.

Response to Arguments

13. Applicant's arguments filed June 4, 2008 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and rejected for the reasons stated above.

14. In response to applicant's arguments which state the cited Mallik reference does not teach that the second optically variable effect generating is viewable through the first, the examiner respectfully disagrees for the reasons stated below. The applicant is respectfully noted that the rejection is based on the embodiment demonstrated in Figures 11 and 12 of Mallik where the second hologram is viewable through the first hologram via the region without the discontinuous reflective elements. The first and second hologram (23, 103 or 121, 127) are NOT side-by-side but superimposing each other.

15. In response to applicant's arguments which state that the cited Mallik reference teaches that the hologram images are being viewed one at a time, (column 9, lines 48-50 and column 10, 50) which therefore prevent the images from the holograms to form "visually integrated image" the examiner respectfully disagrees. The applicant is respectfully reminded to take the reference as whole and not to take just a single sentence. While the reference teaches that it is possible to design the holograms so that different holographic images can be viewed at different orientations or one at a time as additional design options, it never prevents the two holograms to be viewed at same angle and together. Mallik et al teaches explicitly that the first structure or hologram is designed so that the second hologram can be viewed through it, (please see column 2, lines 40-50). This certainly suggests that the two holographic images can be viewed in an integrated manner. Furthermore, Mallik et al teaches that an single incident light can be used to replay both holographic images. This suggests that the two holographic images can be reconstructed at the same time. Mallik et al also teaches that the angle of the diffracted light or the

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reconstructed image lights of the two holograms can be designed and adjusted by adjusting the recording geometry this means it is with general skill of art to make the two holograms reproduced at the same viewing angle at desired. The visual appearance of the holographic images from the two structures are really obvious matters of design choice to one skilled in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***Audrey Y. Chang, Ph.D.
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